#### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization International Bureau



### 

## (43) International Publication Date 21 November 2002 (21.11.2002)

### PCT

# (10) International Publication Number WO 02/093235 A1

(51) International Patent Classification<sup>7</sup>: G02C 7/00, G02B 1/00, G02C 7/10, G02B 5/23, B29D 11/00

(21) International Application Number: PCT/US02/14585

(22) International Filing Date: 8 May 2002 (08.05.2002)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 09/854,419

11 May 2001 (11.05.2001) US

- (71) Applicant (for all designated States except US): VISION-EASE LENS, INC. [US/US]; One Meridian Crossings, Suite 850, Minneapolis, MN 55423 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MORAVEC, Thomas, J. [—/US]; 8776 Blackoaks Lane North, Maple Grove, MN 55311 (US). HAGE, Martin, L. [—/US]; 10231 Yorktown Lane, Maple Grove, MN 55369 (US).

TRAVNICEK, Edward, A. [—/US]; 14884 Waco Street, Ramsey, MN 55303 (US).

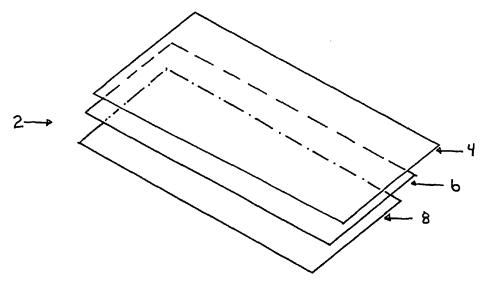
- (74) Agent: LITMAN, Mark, A.; Mark A. Litman & Associates P.A., Suite 205, York Business Center, 3209 West 76th Street, Edina, MN 55435 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).

#### Published:

with international search report

[Continued on next page]

(54) Title: PROVISION OF PHOTOCHROMIC LAYERS ON POLYMERIC SURFACES



(57) Abstract: A flat or curved photochromic laminate structure and a plastic photochromic lens blank can be produced in a simple and efficient manner from relatively low-cost polymeric sheet materials. These laminates can be used to provide goggles, face shields, windows, window coverings, skylights, and optical lenses having efficient, uniform and high quality photochromic properties. The use of a polyesterurethane as the binder for the photochromic material has been found to improve the performance of the photochromic material. There may be a desire to have a protective exterior layer (e.g., an abrasion resistant layer) in combination with the lens system, but that may be provide in various methods. In the case of using the laminate in a goggle application, the laminate may be hard coated on one or both outer surfaces with an abrasion resistant coating, antireflective coating, and/or an anti-fog hard coating.

VO 02/093235